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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,328	10/31/2003	Michael Warner	TESSERA 3.0-273	2556
38091	7590	09/06/2005	EXAMINER	
LERNER DAVID, LITENBERG, KRUMHOLZ & MENTLIK 600 SOUTH AVENUE WEST WESTFIELD, NJ 07090			DANG, PHUC T	
			ART UNIT	PAPER NUMBER
			2818	

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/699,328

Applicant(s)

WARNER ET AL.

Examiner

PHUC T. DANG

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on election filed March 29, 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) 42-52 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 15, 19, 30, 32, 33 and 39-41 is/are rejected.
- 7) ☒ Claim(s) 7-14, 16-18, 20-29 and 34-38 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 040104.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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### **DETAILED ACTION**

This application claims benefit of 60/426,478 filed November 13, 2002.

#### **Restriction/election**

1. Applicant's election without traverse of Group I (claims 1-41) filed on March 29, 2005, drawn to a method of making a microelectronic assembly and withdrawn Group II (claims 42-52).

Applicants have the right to file a divisional application covering the subject matter of the non-elected claims.

#### **Information Disclosure Statement**

2. The office acknowledges receipt of the following items from the applicant:

Information Disclosure Statement (IDS) filed on April 1, 2004.

#### **Specification**

3. The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

#### **Claim Rejections - 35 USC § 102**

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly

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owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-2, 4-5, 15 and 19 are rejected under 35 U.S.C. 102 (e) as being anticipated by Buchwalter et al., hereinafter "Buchwalter" (U.S. Patent No. 6,924,171 B2).

Regarding claim 1, Buchwalter discloses a method for fabricating microelectronic interconnection structures comprising:

- a) providing microelectronic element (10, Fig. 2A) having first major surface with protrusions (18, Fig. 2A) projecting from the first major surface;
- b) covering the first major surface and the protrusions (18, Fig. 2A) with a material (14, Fig. 2B);
- c) removing a portion the material (14, Fig. 2C) so that portions of the protrusions (18, Fig. 2C) are accessible (Fig. 2C); and
- d) assembling the microelectronic element with microelectronic component (similar to structure of Fig. 1H).

Regarding claim 2, Buchwalter discloses the protrusions comprises bumps of bonding material (col. 4, lines 57-60).

Regarding claim 4, Buchwalter discloses the material comprises an epoxy (col. 4, lines 14-18).

Regarding claim 5, Buchwalter discloses the material has a low coefficient of thermal expansion (col. 4, lines 23-26).

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Regarding claim 15, Buchwalter discloses the portion of the material is removed by etching (col. 6, lines 26-29).

Regarding claim 19, Buchwalter discloses a step of interconnecting the protrusions of the microelectronic element with conductive elements of the microelectronic element (col. 4, lines 57-65).

### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 30-33, and 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nye, III et al., hereinafter "Nye, III" (U.S. Patent No. 5,503,286).

Regarding claims 30-31, Nye, III discloses a process for an improved solder terminal comprising:

a) providing a semiconductor chip (30) having a first major surface and contacts exposed at the first major surface; and

b) forming protrusions (120) including applying a first conductive layer (80) over the contacts (75), and a second conductive layer (90) on the first conductive layer (80).

Nye, III discloses all the features of the claimed invention as discussed above, but does not disclose the protrusions project 50 $\mu$ m or less from the first major surface.

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However, the protrusions project 50 $\mu$ m or less from the first major surface is considered to be obvious in design of choice to improve a process for forming protrusion, since such modification would have involved a mere change in the size of the microelectronic. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955).

Regarding claim 32, Nye, III discloses the first conductive layer comprises a high lead solder and the second conductive layer comprises eutectic solder (col. 7, lines 63-65).

Regarding claims 39-40, Nye, III discloses applying an initial layer on at least a ' portion of the first major surface so that the initial layer is in contact with the contacts, before the step of applying the first conductive layer, wherein the initial layer comprises at least one metal selected from the group consisting of chromium, copper, titanium, nickel, gold, and alloys of chromium, copper, titanium, nickel and gold (col. 8, lines 28-34).

Regarding claim 41, Nye, III discloses providing a connection component having conductive elements, interconnecting the protrusions with the conductive elements, and forming dielectric layer extending between the microelectronic component and the microelectronic element so that the protrusions and the conductive elements are at least partially embedded the dielectric layer (Fig. 3).

6. Claims 3, 6 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buchwalter in view of Nye, III.

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Regarding claim 3, Buchwalter discloses all the features of the claimed invention as discussed above, but does not disclose the protrusions comprise a solder selected from the group consisting of high lead solder, C4 solder and eutectic solder.

Nye, III, however, discloses the protrusions comprise a solder selected from the group consisting of high lead solder, C4 solder and eutectic solder [col. 7, lines 63-65].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to modify the above discussed teaching of Buchwalter as taught by Nye, III for a purpose of improving a process.

Claims 6 and 33 are rejected similar to claim 30 above.

#### **Allowable Subject Matter**

7. The following is a statement of reason for the indication of allowable subject matter:

Claims 7-14, 16-18, 20-29 and 34-38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim.

None of the prior art made of record does not disclose the steps of covering the first major surface and the protrusions comprises disposing the microelectronic element in the recess of a mold tool so that the first major surface is disposed in the recess; and disposing the material in the recess so as to cover the first major surface as cited in claim 7 and the material is applied to the first major surface as flowable, curable material and cured to a relatively rigid material as cited in claim 13 and the portion of the material is removed by grinding as cited in claim 4 the step of removing a portion of the material included removing a portion of the

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protrusions as cited in claim 16 and the microelectronic component comprises a base layer and the conductive elements comprises leads, each of the leads having a first end and a second end as cited in claim 20 and a step of connecting the protrusions to conductive elements of the microelectronic component; and forming a dielectric layer over the first major surface so as to surround the conductive elements as cited in claim 28 and the first conductive layer comprises an alloy including lead and tin as cited in claim 34.

Claims 8-12, 17-18, 21-27, 29 and 35-38 are depend directly or indirectly on claims 7, 16, 20, 28 and 34, then, they also would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim.

### **Conclusion**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuc T. Dang whose telephone number is (571) 272-1776. The examiner can normally be reached on 8:00 am-5:00 pm.

9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571) 272-1787. The fax phone numbers for the organization where this application or proceeding is assigned are 571-273-8300 for regular communications and After Final communications.


10. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



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Phuc T. Dang

PD

A handwritten signature in black ink, appearing to read "Phuc T. Dang", written in a cursive style.

Primary Examiner

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